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CONTENTS

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The list of contributors to the NATIONAL GEOGRAPHIC MAGAZINE includes nearly every United States citizen whose name has become identified with Arctic exploration, the Bering Sea controversy, the Alaska and Venezuela boundary disputes, or the new commercial and political questions arising from the acquisition of the Philippines.

The following articles will appear in the Magazine within the next few months:

"The Growth of Germany," by Professor J. L. Rowell of Howard University.

"The Dikes of Holland," by Gerard H. Matthes, U. S. Geological Survey.

"The Annexation of the West," by F. H. Newell, Hydrographer, U. S. Geological Survey.

"The Growth of England," by Dr Edwin D. Mead, Editor of the *New England Magazine*.

"The Native Tribes of Patagonia," by Mr J. B. Hatcher of the Carnegie Museum, Pittsburg, Pennsylvania.

"Explorations on the Yangtse-Kiang, China," by Mr Wm. Barclay Parsons, C. E., surveyor of the railway route through the Yangtse-Kiang Valley.

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THE HARBOR OF MOLLENDO — PERU

THE

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THE ROAD TO BOLIVIA

By William E. Curtis

It takes seven days to make the voyage from New York to the Isthmus; three days from New Orleans, and two from Tampa; but the latter routes are impracticable on account of the quarantine regulations. There is always more or less fever at the Isthmus. It is difficult to keep it away, because Colon and Panama are filled with human driftwood and are asylums for refugees from plagues, politics, and criminal courts. The last yellow fever was brought to Panama, curiously enough, by seven friars from the Philippine Islands. They are all dead but one. Panama is the home of political exiles, unsuccessful revolutionists, and banished presidents of the Central and South American republics. It has a fine hotel, a number of handsome residences, and no end of ruins, which have been accumulating since the time when the governor of the first colony on the American Continent began a history that has no parallel for conspiracy and intrigue on the American Continent.

Usually the voyage from New York is delightful. People always expect a little weather off Cape Hatteras, but when you pass that unlucky crook and cross the Gulf Stream you put on lighter clothing and rejoice in the trade winds which temper the heat of the tropics. The days and nights are of equal length. The sunsets are as gorgeous as you see on the Mediterranean, and there is no twilight. The sun rises promptly at the time appointed in the almanac, and when his day's work is done he drops below the horizon as a tired sailor tumbles into his bunk.

As an Irishman would say, the first land you see is a lighthouse, striped like a stick of candy, that marks Watlings Island, where Columbus stumbled upon a new world. There is a little settlement of negroes and a white magistrate to represent the sovereignty of Queen

Victoria. After leaving Watlings the steamer treads its way through the Bahama Archipelago, giving the passengers a panorama of coral islands, where the sponge-fishers live, groves of cocoanut trees, and lonely lighthouses that guide the ship to Colon, which from the deck of a steamer is one of the prettiest towns on the coast, but when you get ashore is a disappointment and a delusion. The harbor is inclosed with beautiful hills, whose bright-green foliage never fades, and groups of palms nod lazily to each other as they admire the reflection of their own beauty in the water. The palm is the peacock of plants. It is the most graceful tree that grows, but you can't help despising it for being so vain and conceited.

The railroad company occupies one end of the town with shops and boarding-houses, and at the other end is a group of ornate and elaborate gingerbread villas erected for the comfort of the large and luxurious staff of the canal company. They had clubs, billiard rooms, libraries, hospitals, and everything that a colony of cultured gentlemen could desire except churches. The French christened the canal company Christo Colombo, but the Americans call it Colon. One of the most beautiful and costly and at the same time inappropriate statues to the great discoverer overlooks the entrance to the canal. It was erected by the ex-Empress Eugénie, and represents Columbus in the garb of a student, with a benign expression on his countenance and his hands resting on the tresses of a crouching Indian girl.

A surprising amount of work has been done by the Panama Canal Company, contrary to an almost universal misconception that exists among the American people. De Lesseps dug two ditches, each about 18 miles in length, from Colon and Panama toward the center of the Isthmus, which are now partially filled with debris. The new company has been working in the interior, cutting through the summit of the continental divide, which here rises only 300 feet above the sea, and, with one exception, is the lowest point of land between Behring Sea and the Straits of Magellan. The great obstacle that stands in the way of the Panama Canal is the Chagres River, which receives the drainage of a large area and is perhaps the most depraved and unreliable stream in existence. There are two seasons, the wet and the dry. For five months it rains a torrent every day, a rainfall of about four feet a month. The remainder of the year there is no rain at all. Thus for five months the Chagres River is a Niagara, and for seven months a shallow, stagnant stream. The problem is to regulate the rainfall so that it will not wash the canal away in the wet season and leave the upper levels without water in the dry.

GENERAL PANAMA STREET—PANAMA

Panama is one of the oldest and quaintest towns in America. Santo Domingo antedates it a few years, but it was the first settlement on *terra firma*, and the ruins of the original city still lie on the shore of the bay four miles south as they were left by Morgan, the famous buccaneer, who burned and blew up 7,000 houses. The present city dates back to 1673. In 1849 it was the principal station on the route to California. In 1879 the Frenchmen came with their millions, and everybody had money to burn. Then, after a hysterical period, Panama settled down to the sleepy existence which it still retains. The harbor is beautiful, and a group of islands lying about two miles from the city is the headquarters of several steamship companies which furnish transportation facilities for the west coast of America.

The voyage from Panama south is one of the most fascinating and comfortable that the salt water affords. You are always sure of fine weather, fine ships, and a good sea. It never rains, it never blows, and the swell is not heavy enough to make ordinary people seasick. From Guayaquil to Valparaiso the passengers are almost always in

sight of the Andes, whose feet are buried in the desert sands, whose breasts are wrapped in the foamy clouds, and whose peaks are crowned with spotless snow. The spectacle of the Chimborazo rising like a king among an army of Titans is surpassed by few mountain views, and the scenery during the entire distance is always picturesque.

The temperature south of Panama is much cooler than north of the Isthmus, for the heat is tempered by the Humboldt Current, a cold stream that comes up from the Antarctic zone to cool the atmosphere of the west coast, just as the Gulf Stream brings the warm waters of the tropics to moderate the climate of Europe and North America; for you know that if it were not for the Gulf Stream everybody in New England would be living like the Eskimo and potatoes would not grow in Ireland.

We crossed the equator at six o'clock, Sunday, July 2, 1899. The thermometer stood at seventy-six degrees in the chart-room, on the shady side of the ship, and at seventy-eight degrees in the companion-way leading to the dining-room. On the Fourth of July, three degrees south of the equator, it was seventy-six at noon and eighty-one at four o'clock.

From the deck of the steamer in the evening, Guayaquil looks like a little Paris. It lies along the bank of the River Guayas, and the main street, called El Malecon, stretches for two miles or more from a shipyard to a fortress-crowned hill with two decrepit old guns, which are supposed to protect the harbor. El Malecon appears to be lined with long blocks of beautiful marble and stone, and in the evening is brilliantly illuminated. Here appears a row of palaces, then a group of clubs, and beyond a series of blazing ball-rooms. In the morning from shipboard the illusion is not dispelled, and the view is quite as imposing. The architecture is pure and graceful, much of the Moorish order, and the rest on more delicate lines—long arcades like those on the *Rue de Rivoli* or the *Palais Royale* of Paris, and above them balconies sheltered by blinds and awnings of gay canvas have an oriental look. A little railway, with tiny cars drawn by diminutive locomotives, carries heavy loads of merchandise, cocoa, and sugar between the docks and the warehouses.

An interesting kind of craft on Guayas River was called *caballitos*, or "little horses," which consists of bundles of rushes and reeds lashed together and forming a narrow float or raft that tapers off at one end like a gondola. They are as difficult to handle as a canoe, and are used chiefly for fishing. The *caballitos* look very frail and

dangerous when you see them in the water, but it is impossible to sink them.

When you leave the Guayas River to go southward you strike the "Zona Seca," the desert coast, as soon as you pass the boundary of Peru. The steamer follows the shore as closely as safety will allow. The surf has pounded it until the soft places have yielded and its present outlines resemble the wind-carved cliffs on the American desert, and scattered along are many islands gray with guano, dropped by the millions of water birds that make their home along the way-worn and fickle shore. There are a few indifferent harbors, but most of the towns lie upon the unprotected beach, and communication between the steamer and the shore is carried on in large launches, made so buoyant that they ride safely through the surf.

A LAUNCH

Like the arid lands of Arizona and southern California, the desert coast of Peru is rich in vegetable life wherever it can be moistened. About once in a generation a shower escapes from the mountains, and the bitterest lifeless earth is immediately illuminated with fruits and flowers whose germs have lain dormant from remote cycles. In 1892 there fell a series of unprecedented rains. The desert was alive with plants and blossoms where nothing but lifeless sand had been before, and where the seeds came from is a question no one has ever been able to answer.

The steamer stops at every town for an hour or two, long enough to take on and discharge cargo, and the passengers can go ashore and enjoy diversions from the voyage, which are always interesting. We saw funerals and weddings and busy markets and many queer things unique to this locality.

A PAGANO LAVADERO

Back of the port of Pacasmayo, across the desert and the first mountain range, is the town of Cajamarca, where the traveler may still see the remains of the palace in which Pizarro and his legions strangled Atahualpa, the last of the Incas, and butchered the members of his court after he had filled his prison with gold; and farther down the

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]
our homes.

The west coast of South America has been called a panorama of [illegible] a steady thing for 1,500 miles. The town of Mollendo, the terminus of the railway that connects [illegible] and the interior of Peru with the coast, is built upon a rock that extends into the ocean [illegible] by breaking the [illegible] the Pacific; for, as our engineer suggested, what else can you expect when you have nothing else but Australia for a breakwater?

Although Mollendo is the second seaport in importance of Peru, the surf is so bad that people cannot always land there. Sometimes passengers on the steamers have to go on to the next port and [illegible] It furnishes the passengers who are lucky enough to remain on board with some exciting and amusing spectacles.

The water used by the people of Mollendo is brought 85 miles [illegible] plant vegetation.

For the first ten miles out of Mollendo the railway runs along the [illegible] of the mountain side. It passes first through a region of rocks and sand upheaved by some great cataclysm, and continues to wind like a snake in and out of the irregularities of the mountain. There are double curves and serpentines and horseshoes, and at places you can see three or four levels, one above the other, on the same mountain. [illegible] feet, and there is an average rise of 800 feet between stations thereafter [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] of Harvard University. Discoveries are obliged to make up a table of the heavens of the southern hemisphere, the revolution and the purity of the atmosphere and large lens to resolve

[illegible]

[illegible] on the top of the volcano Misti.

Passengers then leave Arequipa for Lake Titicaca on Tuesdays [illegible] every day. The track climbs around the base of the volcano Misti. The mountains are bare and seem to be composed of [illegible] cute like chocolate. It was very cold when we reached for grazing purposes, and on the mountain sides are great stone pens, which were evidently set for this purpose whose walls are as regular and as smooth as if they had been done with a carpenter's knife. At intervals

[illegible] potatoes and barley and ordinary vegetables and fruits grow as they do in the forum.

We cross the grand divide at Crucero Alto (The High Crest), a [illegible]

[illegible] the railway and [illegible] feet above the sea. There are [illegible] settlements in Peru at a greater elevation, but for many years this was the highest point in the world at which steam was used for motive power. The highest elevation ever reached by a railway is known as Ticlio on the Oroya road of Peru, 15,806 feet. The conditions are most favorable, being the end of a division, and the functions of the station here were watch the locks upon the journeys that surround it.

At Crucero Alto water freezes every night of the year, and for a month we often [illegible] to 15, 20 and 30 degrees below zero. There are no [illegible] for [illegible], no [illegible], and [illegible]

At [illegible] the station is [illegible], because of the [illegible] and [illegible] of the [illegible] before the death of those who are lost [illegible]. There [illegible] of Tarabuco of [illegible] of

[illegible] between the temperature of the [illegible] and the sunshine. What [illegible] they are working in their shirt-sleeves.

[illegible]

[illegible] for weeks at a time without a blanket or anything to eat except [illegible] and even strips of dried meat [illegible] and [illegible] of [illegible]

[illegible] At the [illegible] [illegible] of [illegible] drops into the [illegible] [illegible] the large region of [illegible] [illegible], where [illegible] [illegible] a group of [illegible] houses of [illegible] [illegible] water [illegible] [illegible] [illegible] and conceal it [illegible] [illegible] [illegible] of the [illegible] among the [illegible] of the lake every night the [illegible]

[illegible] makes it [illegible] they keep it [illegible] the time, regardless of the [illegible] [illegible] [illegible] of [illegible] make any [illegible] [illegible] depth which, however, in the center is unknown; and this adds to the awe and mystery with which they are regarded by the natives. There are no boats upon the lake except a few small boats or rafts made of bundles of straw which keep very close to the shore for fear of being drawn [illegible] [illegible] and [illegible] in the center. There is some foundation for such fear for only two or three years ago a [illegible] [illegible] five men disappeared in the darkness and was never heard of again.

[illegible]

[illegible]

[illegible]

it appears to have come from Germany and it is remarkable how

[illegible] are [illegible] on all the ranges, [illegible] on the [illegible] and as the [illegible] is the center of the [illegible]

were [illegible] to Jaujan, where the national [illegible] are located [illegible]

the capital of the Incas empire

Five hundred years ago Cuzco was the most [illegible] city in America, with a population of [illegible] or more and a wealth that few communities of Indians have ever surpassed. It was a [illegible] property, half deserted habitation of from [illegible] to [illegible] people

the property and [illegible] what little interest is [illegible] there. Cuzco was the residence of a long line of kings, who [illegible] extraordinary [illegible] by courts of [illegible] robes, and [illegible]

and [illegible] that could [illegible]

Each successive Inca built a new palace at Cuzco, and several [illegible] and convents that rivaled the royal residences in

[illegible]

[illegible] of the [illegible] and power. The [illegible] of gold are

[illegible] and monasteries, which are [illegible] of architectural [illegible]. The [illegible] and cloisters of the convents are adorned in

and monasteries of Europe. In La Merced lie the remains of Juan and Gonzalo Pizarro, the brothers of the conqueror of Peru and

[illegible]

world, but are now the [illegible] victims of time and neglect.

THE COLONIAL EXPANSION OF FRANCE

By Professor Jean C. Pace

Wesleyan College

It was not till the end of the fifteenth and the beginning of the sixteenth century that France attained anything corresponding in her present extent on the European continent and began seriously her colonial expansion. The great [illegible] made possible France's modern epoch [illegible] France and the Italian Renaissance in the fourteenth century, and [illegible] the Renaissance of the period of the Crusades [illegible] Italy, [illegible] Italy [illegible], and Italy [illegible] what was to come. But the beginning of real expansion came upon the west coast of France. Dieppe and Breton fishermen went early to the banks of Newfoundland, to Iceland and Labrador. It is probable that they visited Newfoundland before Cabot, for they fished there at an earlier period than the English. Later following the example of the Portuguese [illegible] the exploration of the New World. Verrazzano, in the service of Francis, visited the Atlantic Coast of North America in 1524, and several years after Jacques Cartier, ascending the St. Lawrence, opened boundless possibilities of expansion for France in the New World.

WHAT WAS ANTICIPATED IN FIRST FRENCH EFFORTS

[illegible] colonization, which [illegible] over [illegible] many centuries made [illegible] In view of the [illegible] of Protestants, Admiral Coligny wished to establish on the American [illegible] refuge for French [illegible] Sixty-five years before the [illegible] of the Huguenots he endeavored to [illegible] in South America, and six years later [illegible] in Florida. The first failed because [illegible] Spanish [illegible] Protestant [illegible]

It is well to remember that though the French are Latins by their [illegible] Celto-German [illegible] They have an [illegible]

[illegible]

[illegible]

[illegible]

Meanwhile, from the first was a center of missionary and public enterprise [illegible] Tie in commerce and the commerce [illegible] latter for the satisfaction of a restless spirit, [illegible] or they won a new empire for France. The loftiest possible motive predominated in the move [illegible] Louis Philippe, to give to the world, to find an opportunity into a great christian civilization, was in perfect keeping with Henry IV's dream of universal peace.

Meanwhile, under Richelieu and Colbert, expansion was [illegible] placed a chain of posts on [illegible] Canada, some islands of the West Indies, and Senegal on the [illegible] Indian Ocean. The western boundaries of New France were contemporaneous with the first [illegible] Mississippi. France was expanding [illegible] Now was her golden opportunity in North America; but many causes in [illegible] were combined with the national capacities of the French were at work to prevent her from making the most use of her opportunity.

REASONS OF THE DECLINE OF FRANCE TO BRITAIN IN EUROPE IN AMERICA AND INDIA

In other nations of the times, France had at times the appearance [illegible] The economic [illegible] To our North American possessions she preferred [illegible] yielding imperial revenue and

[illegible]

[illegible] led the penury of land as in some colonies. Another national trait worked in the same direction. Love of order, which led France to impose rules upon religion, politics, art, and literature, brought overmuch restraints. There were no counterbalancing [illegible] individual or popular liberties. Love of consistency demanded the introduction of feudal institutions, some of which have survived to this day. The people, suffering at home from them, found no incentive to go to the colonies, where they would still live under the [illegible] same abuses. They opposed the advent of Protestants. The whole history of America would have been different had the Huguenots been allowed to settle in New France. Then men like Laurens, Boudinot, Jay, Marion, De Lancey, De Peyster, De Pew and the [illegible] the best blood of this Republic, would have wielded their influence in Canada.

A fact of transcendent importance in determining the fortunes of [illegible] which would have kept aloof from those numerous continental contentions into which at times she entered on account of the [illegible] disastrous results. However, the ultimate fact which sealed the fate of Canada was the mother country. The expansion of a country can go on satisfactorily only in so far as it is supported by a [illegible] XI [illegible] with its colonies because of its abuses and disorders. Nothing could [illegible] flatterers, courtesans, and mistresses. The ruin of the national finances entailed the ruin of the navy. No navy, no colonies. The resultant of these causes led naturally to the Treaty of Utrecht in 1713, the first important colonial collapse of France.

The reign of Louis XV did not alter for the better the working of causes which had proven so fatal. The results of the national life [illegible]

[illegible] Argenson had already [illegible]

[illegible]

country. France is not now grateful to him for his powerful [illegible] he thought it was against England. No [illegible] of [illegible] seemed as a few acres of snow. Among other things, he expressed the very fear also with "to see Canada at the bottom of the sea." The well Montesquieu, at [illegible] "Kings," he says, "[illegible] the stream of populating great countries by colonies. [illegible] The contrary effect of colonies is to weaken the country whence they are drawn without populating those to which they are sent." Economists insisted that no profit was [illegible]. The importance of [illegible] Thoughts objected to colonies because of the presence of slaves in them. So indifferent was the French government that, before signing an agreement with the American colonists, it made a formal renunciation of its North American possessions, and in the new signing arrangements of the Seven Years' [illegible] colonies to be lost as a worthless incumbrance.

[illegible] Many [illegible] regarded [illegible] the New-[illegible] and fisheries of Canada [illegible] Nevertheless [illegible] privileges. This [illegible] in the French heart the bitterness felt never displayed any generosity in victory and seldom any fidelity to [illegible] worth, in the French view at least, and but a slender support. Frontenac, in his [illegible] of the Iroquois [illegible] Empire, [illegible] thought that they were [illegible] for a vast [illegible] deserves [illegible] and upon worth the power [illegible]. He noted the Iroquois [illegible]

[illegible] As to Napoleon, Europe was the field [illegible] land,

or Sudley, he would never have sold Louisiana to the United States

more of the world. The [illegible] possessions of the Indian Ocean, the

[illegible]

THE LESSONS OF THE NEWER EXPANSION IN AFRICA AND ASIA

[illegible] of a little abroad and cared to do great little, yet it was the

[illegible] Bourbon government that inaugurated the newer expansion,

which was destined to better fortune. It was expected, on the part

[illegible] The Algerians, [illegible] the lessons which they

had received in 1815 from Admiral Lemarcher, and in 1817 from Lord

Exmouth of Indian [illegible] France [illegible] took Algiers. The Colonists

[illegible]

upon her people's modest, stoic and laborious barrier. Some public men

[illegible]

most important groups of the Peninsular islands.

During the Second Empire colonial interests did not receive far

[illegible] Colonists preferred to distant climes

[illegible] not social life, but [illegible] should [illegible]

be not social thought. This was far from the case during the

[illegible] empire. However the population of Algeria was progressively

[illegible] in an urgent need of Senegal, eastward and took possession of Tonkin,

[illegible] the Red Sea. New [illegible], in the Pacific, and Cochin China,

in Asia.

The Third Republic marks a great advance. To some extent it secured good compensations, and nevertheless compensations for

[illegible]

[illegible] than to Newfoundland [illegible] Egypt [illegible] France. In

[illegible] France. This, however, is not of [illegible] the market of the French territories [illegible] of Europeans.

VII. WHAT ESSENTIAL TO A GREAT POWER

Colonies, to many, have appeared necessary to progress, and their lack or their subordinate importance as leading to retrogression. "Colonization," says M. Paul Leroy-Beaulieu, "is for France a question

[illegible] In order [illegible] to be [illegible] the great powers, she [illegible] place in

[illegible] of great nations.

Without the shedding of much [illegible], France extended a protectorate over Tunis. Senegal became the starting point of a march eastward, continued until the French flag waves over [illegible], but

[illegible]

[illegible] by different European powers and Morocco

[illegible] whence she had been [illegible] expelled [illegible] Lord Fraser. She

[illegible] made concessions led France to annex the island, though, for [illegible] was only to secure a really valuable

to Annam, Tonkin, and Laos. The whole Mekong Valley [illegible]

[illegible]

France in Asia [illegible] as well as on African soil.

Her possessions are seventeen times larger than her own [illegible] territory. Those of Africa are [illegible] times as large. According [illegible]

[illegible] which I hereafter discuss the possibilities.

THE REACTION OF COLONIZATION ON FRENCH LIFE AND THOUGHT

This expansion is not only the consummation of a national purpose, but the [illegible] of a new life which has arisen [illegible] the French. We have spoken of the industrial development of late years and [illegible], but this is only a part of a larger movement that has [illegible]

though appearances may be to the contrary, never was there [illegible] such a display of national energy. The territorial expansion has [illegible]

From here to [illegible] the [illegible] conceptions of [illegible]

This movement, as well as the development of interest in the science of geography, contributed to a vast work of exploration [illegible]

t in [illegible] Gallieni, De Brazza, Coursin, Mizon, Monteil, Cooper, Foureau, [illegible] Marchand are names long to be remembered in France for these services, no less than [illegible] contributions to the cause of knowledge [illegible]

[illegible] geography, and of ethnography, is the page in [illegible]

[illegible] nature [illegible] to the [illegible] in movements along [illegible] coastal [illegible] have been [illegible] as may be seen in Tunis, Madagascar, and Indo-China. Fearless and [illegible] [illegible] [illegible]

[illegible] past colonial errors. Artists are turning to new fields, with encouraging results, and [illegible] are beginning to paint the life of the new possessions.

At the same time no [illegible] has been taken place in the French mind in reference to colonial [illegible]. With the telegraph and the newspaper, the Frenchman has no longer the aversion to [illegible] which he had in former days. Settlers ask to remain in the colonies when their service is done. Many are happy in their new home beyond the sea. The Comité Dupleix is [illegible] to increase their numbers. The government will [illegible] a comprehensive long-[illegible] program to [illegible] the different parts of French North Africa, its possessions [illegible] and West Africa. Everywhere are springing up schemes for new railroads and for the use of waterways. The [illegible] of Algeria and Tunis are ex-

[illegible]

Railroad, which would take passengers from Brussels and Paris to Lake Tchad in less than six days. With the recent conquest of Fezzan, it has risen to a colossal necessity. The gradual advance of Europeans would [illegible] all the [illegible] as previously [illegible] concerning Africa. So, too, there has been a proposal [illegible]

[illegible]

from the same city. This view is not widely entertained, but it is [illegible]

Let us now consider the positive, permanent results of French co[illegible]

After 187 years of French rule, it is still French [illegible] unassimilated by its non-[illegible]. In fact, it reverts in some [illegible] to type. There [illegible]

[illegible] who do not speak French [illegible]. The French [illegible] are an important factor [illegible] in Canada. There is [illegible] proves that is a great advantage. Therefore [illegible]

[illegible] high [illegible] in literature, science, and [illegible] are [illegible] at the [illegible]

[illegible]

of [illegible] are [illegible] and [illegible], as still very strong [illegible] French sympathies. It may be said that if the French of Maine were [illegible]


FRANCE
AND HER
AFRICAN COLONIES

[illegible] English institutions, those of France seem to be [illegible] modified by the [illegible] of contemporary [illegible]

[illegible] St. Pierre and Miquelon, near Newfoundland, generally known as St. Pierre, are serving an important national purpose. They are [illegible] of fisheries so extensive that no [illegible] 1000 men [illegible] St. Pierre depend [illegible] them. They are also [illegible] modifying as to French colonial [illegible]

FRENCH [illegible] IN ASIA.

[illegible] Indo-China [illegible] Asia [illegible] Indo-China [illegible] canal. The most promising [illegible] developed.

[illegible] making mistakes of policy and of judgment, France has [illegible] with [illegible] who have settled in India [illegible] to the advantages of [illegible] and.

SYRIA, ASSAB, THE SAHARA, AND TUNIS

Africa seems to be the great sphere of French expansion. On the east [illegible] Obock, close to the southern entrance of the Red Sea [illegible] territory is said to contain much coal.

Madagascar is one of the most peaceful colonies. The work of pacification here has been both destructive and constructive. She has overthrown the despotic Hova government of the Hovas. The insurrection which followed was taken much the least of French co-

[illegible]

[illegible] Hova government. The troops are supply to have slaughtered two tribes [illegible] to be delivered from the former Hova oppressors, unless by

[illegible]

[illegible] works. She has built roads from the capital to the coast on [illegible] side of the island, which previously was impassable. Now [illegible] of goods from the coast to Antananarivo for capital. The [illegible] extend in many directions. An extensive agricultural development is taking place, and a new life has dawned for that interesting island.

[illegible]

[illegible] territory is as yet but very imperfectly organized. Many [illegible]

[illegible]

future of this section of Africa, some positive results, which cannot but be approved by all, are already visible.

First, there has been an overthrow of the cruel African despots.

from which they have been driven by wars or slave trade; fourth, the rapid building of roads. One, 600 miles long, binds Timbuktu with [illegible], and another of 300 miles forms the [illegible] of an arc [illegible] the remarkable English lady traveler and scientist, has testified to [illegible] tent. When the Senegal Niger [illegible] canal is finished and the Trans- [illegible] of will spring up in these territories.

France is one of the great colonial [illegible] of the world. The following facts concerning the work of France there are in [illegible] First, she has introduced a security of life never known before; second, she has improved the [illegible] land; she has given a great [illegible] of justice, [illegible]; she has given a great impetus to education, in [illegible] [illegible] with over 600 miles of railroad have been built. Canals have been constructed upon a large scale. In fact this has been one character- [illegible] and Tunis. With the recent stupendous development of the automobile and its introduction into the colonies, the building of these roads is of the greatest significance. Algeria is the most important achievement of France because of the internal development of that colony and its organic relations with continental France. Algiers, the former stronghold of African piracy, has become safer than London, and Algeria as safe as France. Though colonization in South [illegible] together many more than 750,000 Europeans. [illegible] 70 years France [illegible] advantage of countries she has not had that of rich minerals, [illegible] seen the demographic congress. I have an absolute confidence not only in the power of Frenchmen to make the natives accept the presence, regime and the will of [illegible], but in the ultimate [illegible] of [illegible] races. France has always shown her genius to win to [illegible] nations and races. The Navarrese [illegible] to France [illegible] ethnographically Germanic, longs to return to France. Corsica, though Italian, is attached to her Gallic conquerors. Savoy, after some 40 years of union, displays an unquestionable loyalty. In every French colony one sees signs of the growing attachment of the

[illegible]

[illegible] Groups in the interior of Africa, and the French are [illegible].

For the origin and development of the present [illegible] Leclerc, who now represents France so ably in the United States, [illegible]

[illegible] secure the best advantages from the juxtaposition of two forms of society [illegible] two civilizations, with the [illegible] separation.

[illegible] OF [illegible] ORGANIZATION

It is an [illegible] fact that such a emergence [illegible] foreign [illegible] like all such aggregations, are [illegible] at any [illegible] to their [illegible], the natives [illegible]. Algeria [illegible] have [illegible] with a real [illegible]. They are ruled by Moslem law and by [illegible] were [illegible] they form [illegible] communities. They are [illegible] of which they are not conscious. The parts which are [illegible] Western [illegible] of France. It is [illegible] to grive [illegible] to [illegible] the same [illegible] country. Italians, Portuguese, Jews, and Moslems [illegible] France [illegible] different [illegible] have been established. Young women have a [illegible] and a [illegible] of secondary education are organized for the [illegible] several [illegible].

The [illegible] is steadily [illegible]. The [illegible] [illegible] large [illegible] representative [illegible]. It is composed of [illegible] have [illegible] scattered in southern Algeria and Tunis. It is [illegible] may prove to be the [illegible] of North Africa.

Algeria and Tunis [illegible] furnish their own food as a [illegible] of the French garrisons, but [illegible] have a large export [illegible]. In a [illegible]

[illegible] neighbourhood of Algeria in the winter months of

with power. Produce, wher[illegible] is [illegible] Europe. More [illegible] more a twofold current of [illegible] lands Africa with France and France with Africa. French commerce moves southward with the perfection with the same concentration of such movements, and also with designs unspeakable for the natives. It is a [illegible] Retonnet

[illegible] French [illegible] M. Paul Leroy-Beaulieu says

[illegible] "The Intelligent Arab has expressed the desire that in the [illegible] might alternately be permitted to extend over Morocco.

The natives under France are, as a whole, [illegible] less from their [illegible] powers. Were Parliament also [illegible] to be [illegible] request, [illegible]

[illegible] greatest [illegible]."

French expansion should not be [illegible] by [illegible] results [illegible]

[illegible] decrease.

French themselves, but it is also working for international [illegible]

[illegible]

are "[illegible] greatest are the [illegible]."

[illegible] CANNON.*

[illegible] "weather firing." Formerly the firing was from [illegible] [illegible] the effect could be greatly increased. This machine was constructed [illegible] clamps, and an iron funnel was then screwed to the block of wood. The funnel is made of sheet iron 2 millimeters thick and [illegible] these firing stations were established.

[illegible] the wine-growing districts in the vicinity of Styria. Here also the [illegible] sprang up, each with its individual station. In the summer [illegible] that a congress was summoned and met November 6–8, 1900 in

---

* [illegible]

[illegible]

represented by the Secretary of War, and the Secretaries of War and the Interior also sent delegates. [illegible] participants in the [illegible]

[illegible]

[illegible] committee of [illegible], representing Seven, [illegible] and Venice, were appointed to report on the resources of the Danger method for pre-[illegible]

"If the storm was commencing, as the line-storage from the hail was always averted." A number of instances were cited also where in a house where there was a shooting star or meteor fire, the place [illegible] and unaffected, whereas in the districts where the shooting was done no hail occurred.

Mr. Stager, the inventor, however, just enough works the public [illegible] essential reason is contained by a process. There is not yet the certainty of its effectiveness.

"If hail were ignored by "weather firing"? I confess that I am not [illegible] the process we have not the right to deny its existence. In explaining the action of the explosion, two points are to be considered. The effect of the explosion and the force of the vortex may that rises from the gun barrel. In the sky, disturbing causes that prevent violent storms, it is not a natural necessity to make a noise, and as loud a noise as possible. This feels that from the sky can be before I so [illegible]

"M. [illegible]

By the [illegible] what he began his experiments in 1880. "The observation," he says, "that every hailstorm is preceded by an abso-[illegible]

[illegible] of hail and therefore I tried 'weather shooting,' which has been known for centuries.'

[illegible]

[illegible]

[illegible] of the vortex ring from the cannon provable by formation of hailstones. Mr Stigler has found the beginning described to be somewhat [illegible] which are much due to the effects of the vortex ring [illegible] report. From a report from the Imperial Institute, [illegible] [illegible] for investigation by the experiments made by Mr Stigler in 1907, the [illegible]

A vortex ring [illegible] contained smoke [illegible] equalized [illegible]

[illegible] found that the vortex ring could be heard for 15 seconds, and [illegible] [illegible] for more than 10 seconds."

A swallow which was once struck by one of these vortex rings fell [illegible]

[illegible] the whirling of the vortex ring. Step by step the size of the mortar [illegible]

[illegible] ment, which [illegible] effect of precipitation has been taken off. In so far [illegible]

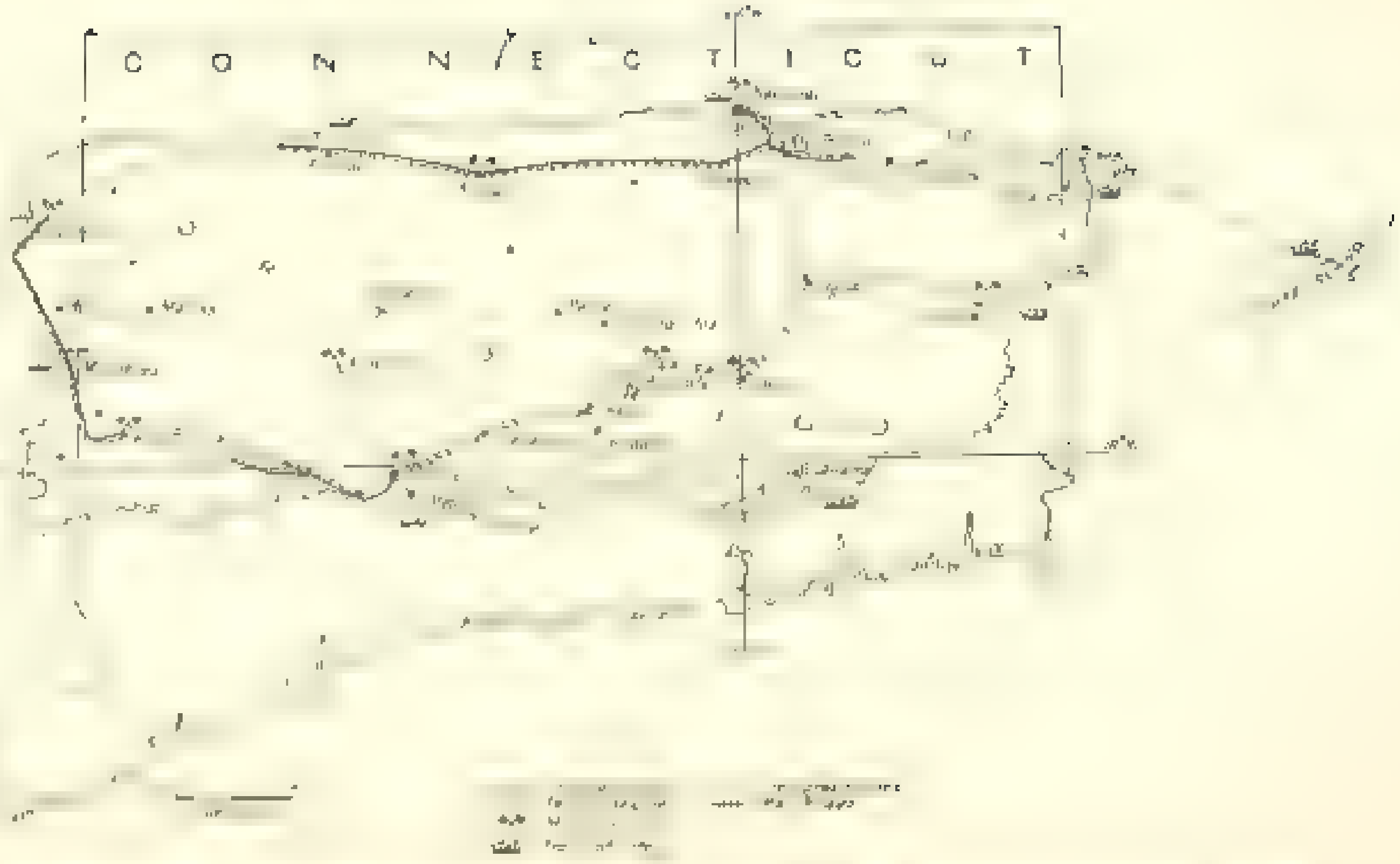
[illegible] ward against the clouds like a shot from a gun barrel, so a distinctly [illegible]

[illegible] were lowered with heavy linen cloth, first through paper targets in [illegible]

[illegible] was found to cover two and half a degree for further observation.

In the destruction power of the vortex ring we also found the force [illegible] in many possibly influence the process of hailstone formation. Unfortunately, as I have mentioned before, we know too little of the [illegible]

[illegible] steel [illegible] 1,000 to 2,000 [illegible]


C O N N E C T I C U T

THE U. S. SIGNAL CORPS IN PORTO RICO

[illegible] courtesy of General A. W. Greely, Chief Signal Officer, U. S. Army, the National Geographic Magazine is enabled to publish the second quarter-sheet of its office map of Porto Rico, prepared by Major [illegible]

Signal Corps of the Army

RUSSIAN RAILWAYS

The phenomenal growth of Russia in industry and trade during the last ten years is in large measure due to the [illegible] extension of her railway lines. Until 1905 Russia's [illegible] was comparatively to meet a heavy loss on a [illegible] railroad purchased, agreements have been made with a few larger companies, and new lines have been constructed by the government itself. As a result 60 per cent of Russian railways are now entirely in the hands of the state, and instead of showing a heavy deficit, yield a surplus. During 1907, 71,000,000 passengers were carried [illegible] Russian railways, only a few days, run from the White to the Black Sea, and from [illegible] the Yellow Sea [illegible] rates of fare [illegible] and west [illegible] the war.

Dr. H. S. Pritchett, who was assume the presidency of the [illegible] establishment of the Coast and Geodetic Survey by Mr. [illegible] Newcomb in the United States is better qualified for [illegible] than Mr. [illegible] to be the head of this important scientific bureau. He entered the service in 1887, worked his way up from [illegible], and also gradually [illegible] from the lowest to the highest grade.

THE REVOLT OF THE ASHANTIS

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

GEOGRAPHIC MISCELLANEA

A [illegible] the [illegible] of the U. S. Board on Geographic Names is now in [illegible] for [illegible]. The Board, which has recently been enlarged, consists of Henry Gannett, chairman; Marcus Baker, secretary; Andrew H. Allen, Otis T. Mason, H. G. Ogden, A. B. Johnson, [illegible], Major James L. Lusk, A. Von Haake, H. F. [illegible], and [illegible].

The *Ice-bound Chart of the Great Lakes*, which was last year issued for the first time during the winter of navigation by the U. S. Weather Bureau as an experiment, will hereafter be a permanent feature of the Weather Bureau work. The chart proved so serviceable in 1901 that it is now indispensable to vessels moving between the Lake ports. It is edited by Prof. A. J. Henry and Mr Norman B. Conger, of Detroit, Mich.

For the first time in the history of the country the exact levels, mileage, bends, and longitudes of the Mississippi River are being determined. The work is in the hands of the Mississippi River Commission, the board of army and civilian engineers charged with the duty of improving this vast waterway. After years of experiment and more or less defined effort at improvement [illegible] permanent good [illegible], the commission has wisely decided to survey the entire system and to map every foot of its course.

The railroad which was begun five years ago to connect Victoria Nyanza with the east coast of Africa has been completed. One of the first effects of the line will be to give warning to Lower Egypt of the rise of the water on the Upper Nile, information that will in many years be worth millions of dollars to the people of Lower Egypt, who depend on the river for their irrigation water. The telegraph which is being built along the same route is now in operation to [illegible], about 250 miles inland. The completed line, measuring 600 miles, will [illegible] years.

The havoc that can be wrought by the hurricanes which periodically devastate the [illegible], and especially the latter, [illegible] will in future be reduced to a minimum, owing to the effective work of the U. S. Weather Bureau. Twice daily meteorological stations are being established at all points on the Gulf of Mexico, the Caribbean Sea, and in the West Indies from which advance warnings can be issued. The most recent of these stations is to be at Turks Island, at the extreme southeastern end of the Bahamas, where Dr. J. C. Franklin is now engaged in putting it into successful operation.

The concession by the Chinese Government allowing steamers of [illegible] to navigate the inland waters of the empire has proved worthless in fact. A dispatch to the London *Times* from Shanghai states that the Chinese customs officials have refused to permit a British vessel to trade between [illegible] islands, only a few score miles distant from the mainland. This [illegible] of treaty [illegible] rule, [illegible] is the result that [illegible] steamers which were especially built and sent to China for [illegible] trade either remain tied to their wharves or have been sent back to England by their disgusted owners.

[illegible], the first of $[illegible] and the second of $75, were offered in 1899 by the National Geographic Society for the best essays on Norse discoveries in America. The competition closed December 31, 1899. By the decision of [illegible] Albert Bushnell Hart, Professor of History in Harvard University; Anita Newcomb McGee, Acting Assistant Surgeon, U. S. Army; John Bach McMaster, Professor of History in the University of Pennsylvania, and Henry S. Pritchett, Superintendent of the U. S. Coast and Geodetic Survey, the first prize has been awarded to [illegible] Dixon, of New York City, and the second prize to [illegible] Foster Murray, of Norfolk, Virginia.

[illegible] the earthworm of temperate regions is familiar [illegible] by J. C. Branner, Professor of Geology in Leland Stanford Jr. University. Professor Branner discovered new proof in favor of [illegible] during several [illegible] passed in Brazil in 1899, which he [illegible]. In the state of [illegible] through rock which in places was decomposed, and in some of the [illegible] penetrating the ground to a depth of ten, twelve, and even fourteen feet. Naturally the [illegible] do not bore into the hard [illegible] of rocks, but [illegible] of the ground [illegible] passage [illegible] of rock [illegible].

The gold-bearing area of Cape Nome and the copper [illegible] in the vicinity of Copper River [illegible] for exploration in Alaska at the present time, will be surveyed by parties from the U. S. Geological Survey during the coming summer. The extent of the gold [illegible] Cape Nome is unknown [illegible] of from 2,000 to 4,000 square miles [illegible]. Mr Alfred H. Brooks, geologist, [illegible] in company with Mr [illegible] of Cape Nome [illegible] topographer, [illegible]. Another party, led by Messrs W. J. Peters and T. G. [illegible], [illegible] of Alaska.

The [illegible] of German [illegible] invested [illegible] commercial enterprises beyond the seas [illegible] by Germans. In Mexico [illegible] $[illegible]; in Central America and the West Indies, $[illegible]; [illegible] South America $[illegible]; [illegible] $[illegible]; [illegible] Asia [illegible]; in South Africa [illegible] $[illegible]; in West Africa $[illegible]; [illegible] $[illegible]; in [illegible] Africa $[illegible]. In Turkey Germans have [illegible] $[illegible] [illegible] Bagdad Railway [illegible]. [illegible] Canada [illegible] $[illegible].

[illegible]

[illegible]

[illegible]

cable laid between Cebu and Leyte. The Signal Corps is making the connections as short as possible, as the frequent earthquakes play havoc with telegraphic lines.

The gravity of the bubonic plague on every continent has not lessened. In San Francisco several cases of the disease have occurred and the board of health has officially proclaimed its existence in the city. Failure to quarantine of Chinatown and quarantine will probably prevent a further invasion of the United States. In Bombay the difficulty of coping with the disease has been greatly increased by a protest of the Mohammedan population on one day

against the precautionary measures being taken by the Indian Government. At Manila, Philippine Islands, Osaka, Japan, Sydney, Melbourne, and [illegible], Australia, and Auckland, New Zealand, many fatal cases have occurred. A number of diseased or infected rats were found on the wharves at the southeastern coast of Africa, in Mauritius, at Suakin, on the Red Sea, at Cairo, at [illegible] at the northern end of the Suez Canal, and at Rio de Janeiro, Brazil, the [illegible] plague.

From St. Petersburg to Vladivostok by way of the Arctic Ocean is the plan of itinerary of an exploring party that early in June left [illegible] on the steamer Zarya. Six scientists and twelve seamen, experienced in Arctic travel and led by Baron Toll, make up the party. Their special object is the careful exploration of the Arctic regions north of Siberia. After a brief stop at Tromsö, Norway, and at the new Russian port of Catherine Harbor, [illegible]

[illegible]

[illegible], and come establish their winter headquarters. The neighboring territory is to be explored during the winter of 1900-'01. On the breaking up of the ice, about August, 1901, they expect to pass on to Sannikoff Land, [illegible]

[illegible]

It is hoped that the Long Island, following the routes of the Jeannette and [illegible] of the Fram. The winter of 1901-'02 will be devoted to determining whether the group of islands extends to the Pole. When the winter route [illegible] in 1902 they will resume their voyage to Bering Strait and reach Vladivostok in the fall of the same year.

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